PRELIMINARY UPSTREAM
RESERVOIR STUDIES

Attachment to

United States Department of Agriculture Report

Western New York River Basins

Oswego River Basin

Prepared by

United States Department of Agriculture

March 1969

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DRAFT

OSWEGO RIVER BASIN

PRELIMINARY UPSTREAM RESERVOIR STUDIES

Introduction

The purpose of the United States Department of Agriculture's participation in the Western New York River Basin Study is to assist in the development of a comprehensive plan which will be used by the New York State Water Resources Commission, the Regional Water Resources Planning and Development Boards, and other local, state, and federal agencies in their planning and construction activities for the conservation, development, and utilization of the water and related land resources to meet the rapidly expanding demands for water, both now and in the foreseeable future.

The Soil Conservation Service was given the task of preparing an inventory of upstream water impoundments to meet present projected needs for water related goods and services. The Economic Research Service assisted by estimating the value of land, roads, buildings, and utilities in the site areas, and also helped in identifying the potential of sites for particular purposes.

The Forest Service provided hydrologic data for the forested areas which was used in determining runoff for the design of each site.

The New York State Conservation Department identified those sites which had the best potential for recreation or fish and wildlife development.

The physical design and cost data was developed for each site to the extent

[illegible] project [illegible] proposed for [illegible] purposes: (a) flood [illegible] (b) [illegible], (c) irrigation, (d) fish and wildlife [illegible] [illegible] (e) water quality control, and (f) recreational [illegible]

[illegible] is based upon preliminary data and the information [illegible] [illegible]. [illegible] investigations [illegible] will be necessary [illegible] topography and geologic [illegible] [illegible] construction.

[illegible] Dam [illegible]

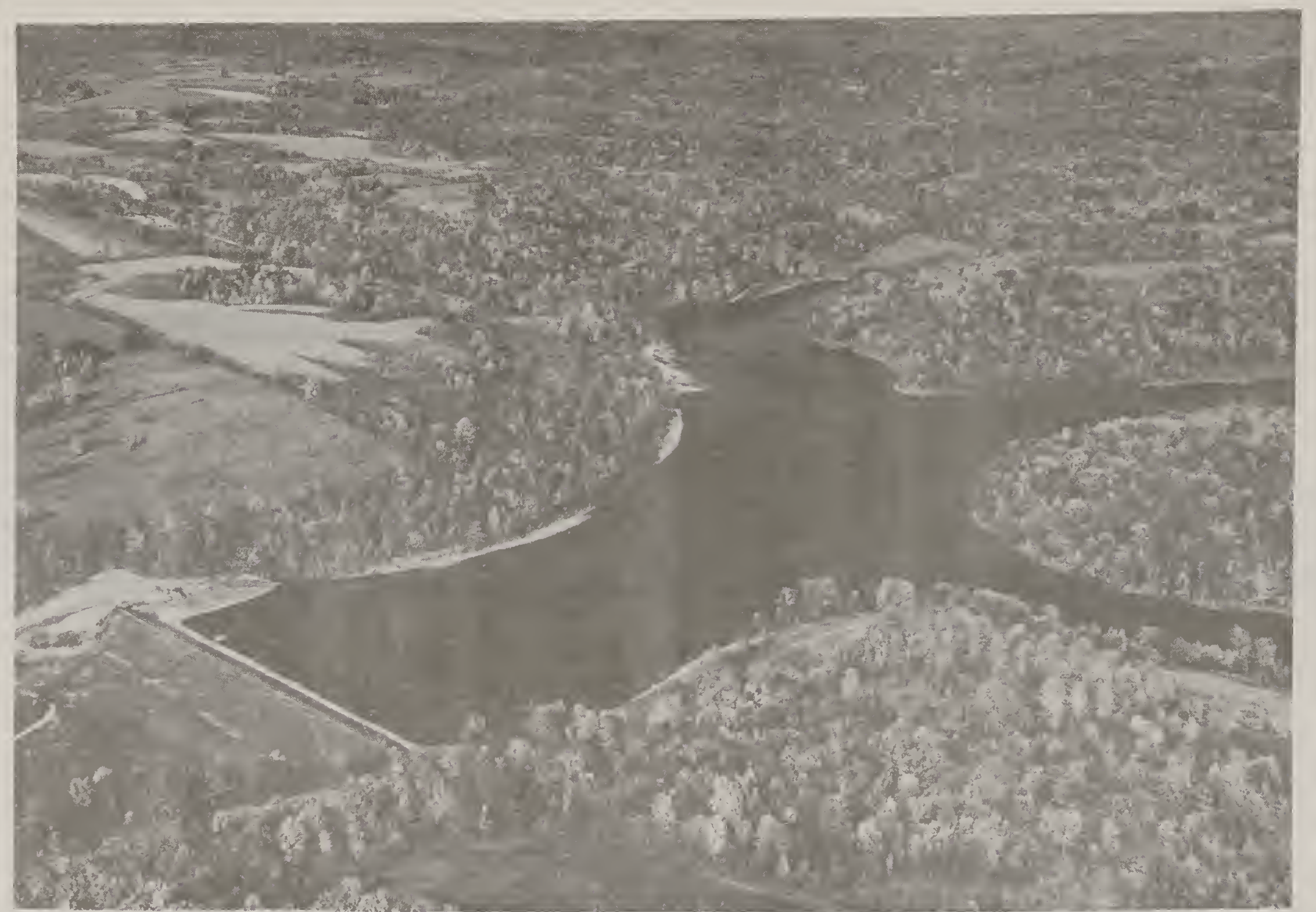
[illegible] over [illegible] 200 [illegible] [illegible] preliminary [illegible] [illegible]

[illegible] is shown on Figure [illegible]

[illegible] is shown on Figure [illegible] [illegible] [illegible]

[illegible]

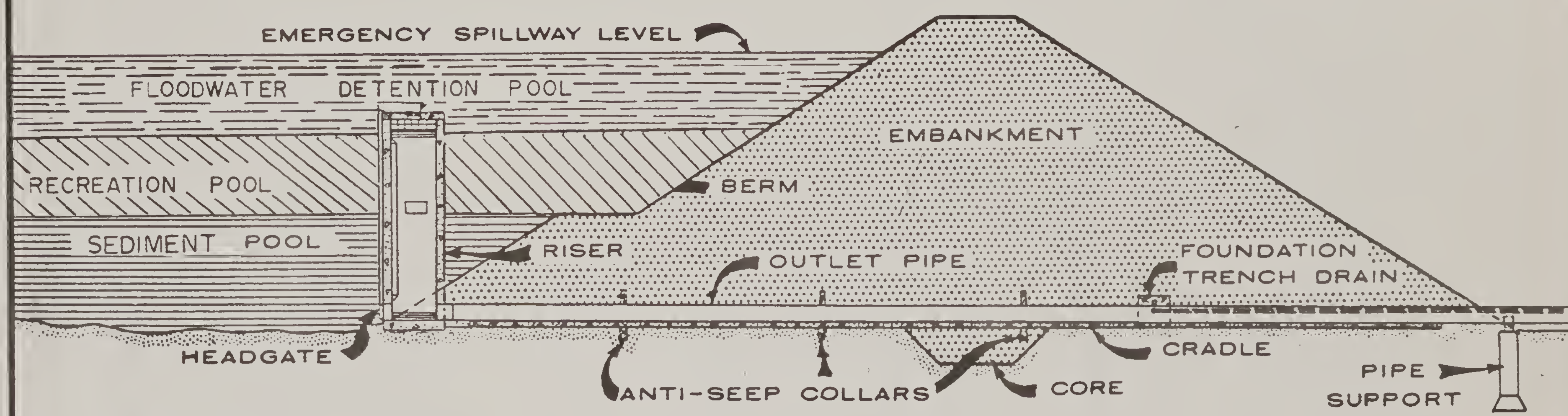
[illegible] spillway [illegible] The [illegible] [illegible] [illegible] spillway [illegible] [illegible]



There are numerous potential sites such as this in the basin. They are capable of satisfying many of the basin needs such as; flood prevention, recreation, municipal and industrial water supply, irrigation, and water quality control.

U. S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



SECTION OF A TYPICAL FLOODWATER RETARDING STRUCTURE

WITH RECREATIONAL STORAGE ADDED

The principal spillway consists of the outlet pipe and the riser. The outlet pipe is usually constructed of reinforced concrete pipe. The riser is a rectangular concrete shaft which serves to conduct water to the outlet pipe.

The emergency spillway is an earth channel excavated around the end of the dam. Both the dam and the emergency spillway are seeded to provide vegetative cover.

One important characteristic of this flood retarding structure is that it is self-operating. There are no outlet gates which require opening and closing to control floods. The rate of flow out of the reservoir is controlled by the selection of the appropriate size outlet conduit. In times of flood, more water enters the reservoir than can be discharged through the outlet conduit. This excess water is temporarily stored between the retarding pool level and the emergency spillway level. When the flood has passed, the stored water is gradually discharged through the outlet pipe.

A sufficient volume of storage is provided between the retarding pool level and the emergency spillway level so that a flood expected to occur no more than once in 100 years will be controlled by the structure. Should a flood greater than this occur, it is discharged through the emergency spillway. The height of the dam is selected so that a flood of the maximum possible magnitude will not overtop the structure.

[illegible]

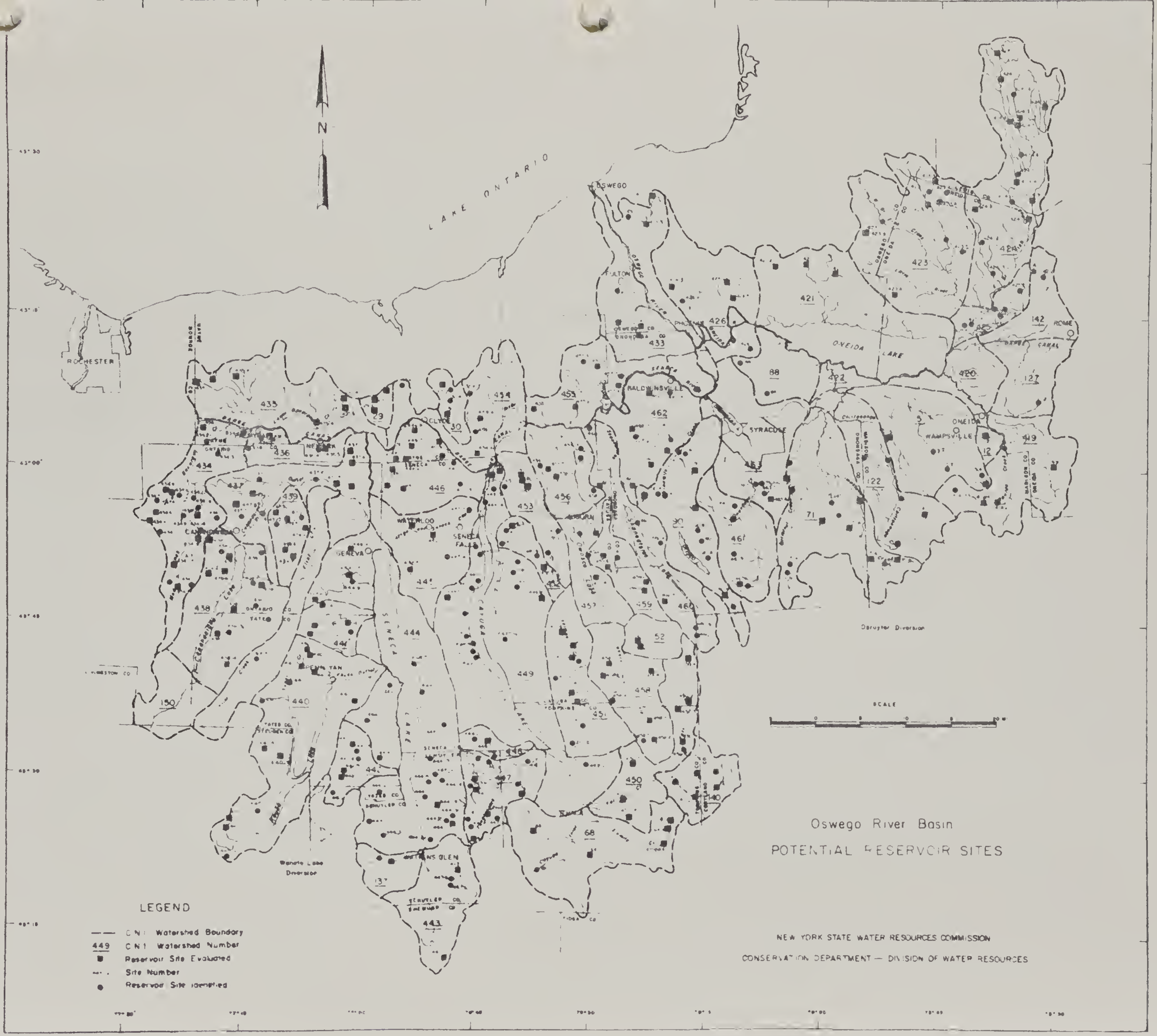
[illegible]

[illegible] River basin was divided into [illegible] watersheds according to the [illegible] established by the Conservation Needs Inventory for the State of New York. [illegible] of the entire Genesee River basin and each watershed [illegible] from U.S. Geological Survey topographic maps to show the [illegible], drainage pattern, system of roads and other pertinent [illegible] and [illegible] to show site locations. Figure 2 is a [illegible] all sites considered in the investigation. Each selected structure [illegible] a cost estimate was made, is also depicted by a [illegible], [illegible] clearly [illegible] physical characteristics [illegible]

[illegible]

[illegible] locations were selected for [illegible] structures by a study of USGS topographic [illegible] followed by a field reconnaissance of each site. The Soil Conservation [illegible] the location of [illegible] sites and 43 were located by the New York [illegible] Water Resources. Sites were numbered consecutively in [illegible] in which they are located [illegible] followed by a [illegible] for each site. [illegible] sites selected in [illegible] of the structure sites. A final list of [illegible] sites [illegible] for which design and cost data was developed. Site screening and [illegible] of sites for further study was based on many factors. The [illegible] drainage area-storage area relationship, [illegible], foundation and [illegible] conditions, and [illegible], buildings, and utilities.

[illegible] section in the back of this report is a listing of the [illegible] which were eliminated from further study. Design [illegible] developed for these sites.



Oswego River Basin

POTENTIAL RESERVOIR SITES

NEW YORK STATE WATER RESOURCES COMMISSION

CONSERVATION DEPARTMENT — DIVISION OF WATER RESOURCES

[illegible]

[illegible] were surveyed on structures which appeared to be the most [illegible]. At selected sites, elevations of significant easement problems [illegible] on roads and buildings.

[illegible]

(1) [illegible] were based on Soil Conservation Service criteria for Public Law 566 [illegible].

The [illegible] height of the dams, and the size of the pools were affected by one or [illegible] of the following factors: (1) the storage volume needed to retard a 100-year [illegible] without discharge occurring in the emergency spillway; (2) the [illegible] pool volume, (3) the estimated 0.5 inches of [illegible] for [illegible] accumulation, (4) limiting topographic or geologic features, [illegible], and (6) critical land [illegible] elevations. [illegible] from surveyed centerlines or centerlines plotted from USGS [illegible] maps.

[illegible]

[illegible] estimates were developed for all reservoirs on the basis of [illegible] a unit price per cubic yard. This unit price [illegible]. The unit price is based on a comparative study of [illegible] of $1.00 [illegible] in New York (see Figure [illegible]). The [illegible] higher than the actual [illegible] increases in construction prices.

[illegible] conditions exist, [illegible] the [illegible]

[illegible]

[illegible] percent [illegible]

[illegible]

[illegible] construction cost plus 20 percent for [illegible], [illegible] percent of construction cost for [illegible] relocations, and [illegible] percent of construction cost for [illegible] of easements.

[illegible] relocations were based on [illegible] of railroads and highway departments in the [illegible]

[illegible]

[illegible] Soil Conservation Service [illegible]

[illegible] and the computations and [illegible] of the [illegible]

[illegible]

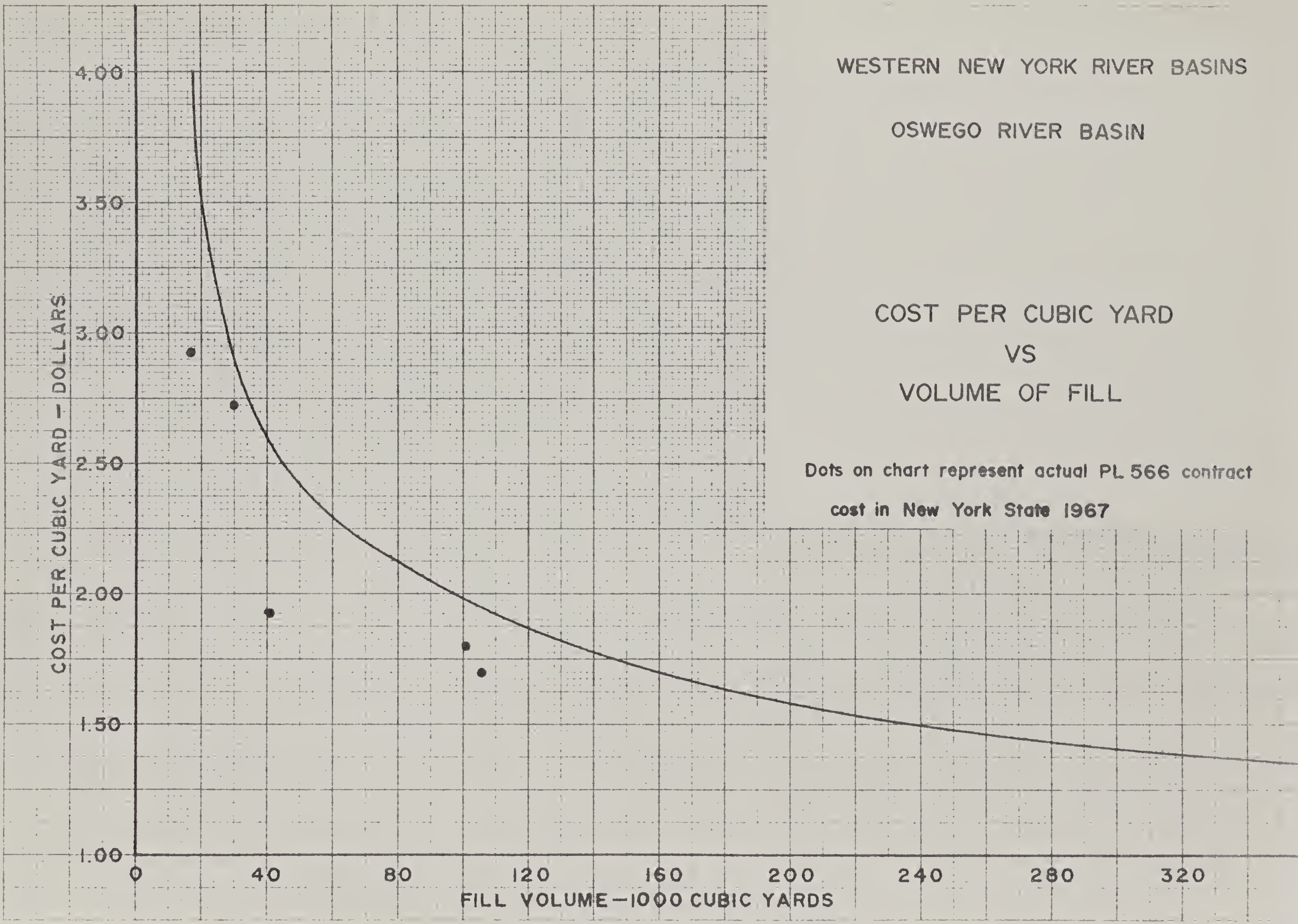
BEE 20x20 TO INCH

WESTERN NEW YORK RIVER BASINS

OSWEGO RIVER BASIN

COST PER CUBIC YARD
VS
VOLUME OF FILL

Dots on chart represent actual PL 566 contract cost in New York State 1967



[illegible] INVESTIGATION

[illegible] geologic investigation of the potential reservoir sites was conducted in [illegible] phases: (1) map studies, (2) field examination, (3) geophysical survey, (4) [illegible]. [illegible] is a preliminary nature and further consideration of any given [illegible] require more intensive geologic investigation.

[illegible] field examination were selected by examining the geologic map of [illegible] and the appropriate county soil survey. Sites which may be noted with [illegible] good [illegible] potential were given a cursory field examination and geologic [illegible] conditions noted. At some sites, preliminary geophysical investigations [illegible] to augment observed surface conditions. These studies were made [illegible] the benefit of boring information and may not be accurate enough for the [illegible] a [illegible].

[illegible] rock types or geologic conditions of the [illegible] potential. Amount of rock excavation and availability of [illegible] rating of good, fair, or poor, based on the geology [illegible] can be found in the table starting on page [illegible].

[illegible] conditions were too great, the site was eliminated from further [illegible] only some favorable [illegible]. In these cases, where [illegible] feasible, the geologic and economic [illegible] determined [illegible] the cost of carrying the program.

WESTERN NEW YORK RIVER BASIN
Oswego River Basin

Geologic Appraisal of Selected Sites

Site #	Rating	Remarks
5-1	Fair-Good	Lacustrine silts & clays in flood plain
5-4	Fair	Rock excavation and leakage through limestone
12-1	Good	
29-1	Poor	Rock excavation and sand & gravel in foundation
29-2	Good	
29-3	Fair	Unstable foundation in flood plain
30-1	Fair	Lacustrine deposits in flood plain
30-3	Poor	Soft foundation in flood plain
52-1	Fair	Outwash deposit in right abutment
52-2	Poor	Outwash deposit in left abutment; rock excavation in right abutment
68-1	Fair-Poor	Outwash deposits in both abutments
68-2	Good	
68-4	Good	
68-5	Good	
68-6	Fair	Some rock excavation necessary
71-1	Poor	Leakage through limestone
71-3	Fair	Lacustrine silts and sands in left abutment and flood plain
71-6	Fair	Outwash deposits in right abutment and flood plain
71-8	Good	
71-9		
71-13	Fair	Outwash deposit in right abutment
90-1	Fair	Rock excavation in both abutments
90-3	Good	
90-5	Fair	Outwash deposit in right abutment
90-9	Fair	Lacustrine silts & clays in flood plain
122-3	Fair	Lacustrine deposits in right abutment
122-4	Poor	Outwash deposits cover entire site
137-2	Good	
140-1	Fair-Poor	Outwash deposits in right abutment
140-2	Good	
140-3	Fair	Outwash deposits in left abutment
140-4	Good	
140-5	Fair-Poor	Outwash deposits in both abutments
419-1	Good	
419-2	Fair	Outwash deposits in right abutment
419-4	Good	
421-1	Fair	Soft foundation in flood plain
421-2	Good	
421-3	Fair	Pervious glacial till in abutments
423-2	Fair	Outwash deposits in flood plain
423-3	Good	
423-6	Good	
423-9	Fair	Outwash deposits in right abutment
424-1	Good	
424-2	Good	
424-3	Fair	Soft foundation in flood plain

Site #	Rating	Remarks
424-4	Fair	Outwash deposits in flood plain
424-5	Fair	Outwash deposits in right abutment
424-8	Good	
424-9	Good	
424-10	Fair	Outwash deposits in flood plain
424-11	Poor	Outwash deposits in left abutment & flood plain
424-15	Fair	Outwash deposits in flood plain
426-1	Fair	Outwash deposits in both abutments
426-3	Poor	Outwash deposits in both abutments; lacustrine deposits in flood plain
426-5	Fair	Lacustrine deposits in both abutments
433-1	Fair	Permeable till foundation
433-3	Fair	Lacustrine silts and clays in flood plain
433-5	Poor	Lacustrine silts and clays in both abutments
433-7	Poor	Lacustrine silts and clays in left abutment; permeable till foundation on right abutment
434-1	Good	
434-2	Poor	Permeable abutments
434-4	Poor	Highly pervious left abutment; lacustrine silts and clays in flood plain
434-7	Fair	Lacustrine silts and sands in both abutments
434-8	Fair	Lacustrine silts and clays in both abutments
434-10	Poor	Outwash deposits in both abutments
434-12	Fair	Lacustrine silts & clays cover entire site
434-15	Good	
434-16	Good	
434-17	Fair	Alluvial deposits cover entire site
435-1	Good	
435-2	Fair	Lacustrine silts & sands in flood plain
435-3	Fair	Outwash deposits in flood plain
435-4	Good	
435-5	Good	
435-6	Good	
436-3	Poor	Outwash deposits in flood plain
436-5	Poor	Outwash deposits in both abutments
437-2	Poor	Lacustrine silts & sands in both abutments
437-5	Fair	Lacustrine sands in left abutment; soft foundation in flood plain
437-6	Poor	Lacustrine silts and sands cover entire site
437-7	Fair	Outwash deposits in right abutment and flood plain
437-8	Fair	Outwash deposits and lacustrine sands in right abutment and flood plain
437-9	Fair	Lacustrine silts and clays in both abutments
438-1	Good	
438-3	Good	
438-4	Good	
438-5	Good	
438-6	Good	
438-9	Fair	Rock excavation in emergency spillway area
438-12	Fair	Lacustrine silts and clays in flood plain
438-14	Fair	Rock excavation in left abutment, outwash materials in right abutment

Site #	Rating	Remarks
439-1	Good	
439-3	Good	
439-4	Good	
439-6	Good	
439-7	Fair	Lacustrine silts and clays in right abutment
440-1	Poor	Outwash deposits cover entire site
440-2	Fair	Outwash deposits in right abutment
440-3	Fair-Poor	Lacustrine silts and sands in both abutments
440-4	Fair	Rock excavation in flood plain
440-5	Poor	Outwash deposits in both abutments; lacustrine sands in left abutment
440-6	Good	
440-8	Good	
440-9	Fair	Outwash deposits in right abutment
440-10	Good	
440-13	Fair	Rock excavation in flood plain
441-1	Good	
441-2	Fair	Rock excavation in flood plain
441-3	Good	
441-4	Good-Fair	Outwash deposit on upper left abutment
442-2	Poor	Outwash deposits in both abutments
442-3	Poor	Outwash deposits in both abutments
442-4	Fair	Outwash deposits in left abutment
443-1	Fair-Poor	Outwash deposits in flood plain
443-3	Poor	Outwash deposits in both abutments
444-4	Poor	Outwash deposits cover entire site
444-8	Fair	Outwash deposit in right abutment
444-10	Good	
444-18	Good	
444-20	Fair	Outwash deposit in left abutment
444-23	Fair-Poor	Rock excavation on entire site
445-1A	Fair	Lacustrine sands in both abutments; lacustrine silts and sands in flood plain
445-2	Poor	Lacustrine silts and clays in both abutments
445-5	Good	
446-1	Poor	Outwash deposits in left abutment; lacustrine sands in left abutment
446-2	Fair	Lacustrine silts and clays in both abutments
446-4	Poor	Lacustrine silts and sands in right abutment; soft foundation in left abutment and flood plain
446-5	Good	
446-6	Fair	Lacustrine sands and clays in flood plain
446-7	Fair	Lacustrine silts and sands in left abutment and flood plain
446-8	Good	
446-9	Fair	Lacustrine silts and clays in flood plain
446-10	Fair	Lacustrine silts and clays in flood plain
447-4	Fair	Rock excavation in flood plain
447-6	Poor	Outwash deposit in left abutment; soft foundation in flood plain
447-9	Fair-Poor	Outwash in both abutments

Site #	Rating	Remarks
447-10	Good	
447-12	Good	
448-3	Good	
449-6	Good	
449-11	Good	
449-12	Good	
449-18	Fair	Soft foundation over wide flood plain
450-1A	Fair	Lacustrine silts, clays and sands in right abutment
450-2	Fair-Good	Small amount of outwash deposit and soft foundation in flood plain
450-3	Good	
450-4	Fair	Alluvial fan on left abutment
450-5	Fair	Soft foundation in flood plain
450-6	Fair	Soft foundation in flood plain
450-7	Poor	Stratified coarse material on left abutment; rock excavation on right abutment
451-2	Good	
451-3	Fair	Rock excavation in both abutments
451-6	Poor	Outwash deposits in both abutments; lacustrine silts and clays in right abutment
451-7	Fair	Outwash deposits in flood plain
451-8	Fair	Outwash deposits in left abutment
452-2	Good	
452-5	Poor	Outwash deposits immediately upstream from site
453-4	Fair-Good	Possible rock excavation
453-5	Fair-Good	Lacustrine silts and sands in flood plain
453-6	Good	
454-4	Fair	Soft foundation in flood plain
454-6	Fair-Good	Lacustrine silt and clay in flood plain
455-1	Fair	Lacustrine silts and sands in flood plain
455-2	Poor	Lacustrine silts and sands in both abutments
455-4	Good	
455-6	Good	
456-5	Good	
457-2	Good	
457-3	Good	
458-1	Fair	Outwash deposit in flood plain
458-2	Fair	Outwash deposit inflood plain
458-3	Good	
458-4	Fair	Outwash deposit in left abutment
458-6	Poor	Lacustrine deposits in both abutments, underlain by gravel in left
458-7	Poor	Outwash and lacustrine deposits in both abutments
459-2	Good	
459-4	Fair	Rock excavation in flood plain
459-5	Good	
459-6	Good	
460-2	Good	
460-5	Fair	Soft foundation in flood plain
461-2	Fair-Poor	Outwash in both abutments

Site #	Rating	Remarks
461-4	Good	
462-1	Good	
462-2	Poor	Outwash deposit in left abutment
462-3	Poor	Outwash and lacustrine deposits in left abutment; rock excavation in right abutment; soft foundation in flood plain
462-5	Fair	Soft foundation in flood plain
462-7	Fair	Lacustrine silts and sands in left abutment; soft foundation in flood plain
462-9	Good	
463-4	Good	

Good - No major problems

Fair - Some problems, but can be remedied

Poor - Numerous problems which can only be remedied at great cost

ROME MUCK SUBWATERSHED INVESTIGATION REPORT

TRIBUTARY OF UPPER WOODS CREEK - WATERSHED NO. 127

Western New York Type IV River Basins

Oswego River Basin

Oneida County, New York

February 1970

UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Conservation Service   Economic Research Service   Forest Service

ROME MUCK SUBWATERSHED INVESTIGATION REPORT

OSWEGO RIVER BASIN

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PREFACE

Selected watersheds are investigated in sufficient detail to determine the potential that exists in these watersheds to help solve the water and related land resource problems and needs through PL-566 type watershed projects.

Where it is determined that a project is potentially feasible and should be initiated within 10 to 15 years, a watershed investigation report is prepared. Rome Muck in the Oswego River Basin was determined to be a potential PL-566 project.

The Rome Muck Subwatershed Investigation Report is prepared to enumerate the needs and problems, to propose solutions, and to evaluate costs and benefits. This information can help the Eastern Oswego Water Resources Planning Board develop their water resources plan. Further, other interested local organizations will find the report useful in initiating the development of Rome Muck.

ROME MUCK SUBWATERSHED INVESTIGATION REPORT

TRIBUTARY OF UPPER WOODS CREEK - WATERSHED NO. 127

Western New York Type IV River Basins

Oswego River Basin

Oneida County, New York

February 1970

THE WATERSHED IN BRIEF

Rome Muck subwatershed is located in central New York within the southern boundary of the city of Rome (population 51,600) in Oneida County. Syracuse is 38 miles west and Utica 12 miles southeast. The watershed is part of the Upper Woods Creek Watershed No. 127 and is in Land Resource Area L-101, the Ontario-Mohawk Plain of the Lake States Fruit, Truck, and Dairy Region. The 5.2 square mile (3,330 acre) Rome Muck drainage area flows into the New York State Barge Canal. Three main transportation routes are located within close proximity to the watershed. The New York State Barge Canal forms the northern edge of the watershed; the New York State Thruway is located about 3 miles to the south; and a main line of the Penn-Central railroad crosses the watershed.

Mean annual rainfall in the Rome area is 47 inches and this yields about 22 inches of runoff annually. Distribution of the precipitation is fairly uniform throughout the year with the maximum amounts occurring during the months of June and July. More than 22 inches of rainfall can be expected during the 143 day growing season.

Temperature ranges from a low of -27° to a high of 98° and averages about 47°. During the growing season the average temperature is 64°. Because of the location of the subwatershed at the head of the Mohawk Valley, westerly winds are funneled across the muck causing erosion during dry periods.

Watershed cover includes forested-24 percent (800 acres)- and open land-76 percent (2,530 acres). The following table shows a more detailed breakdown of the land use in the watershed:

Land Use	Percent	(Acres)
Open Land		
Crop	48	(1600)
Pasture, Idle, Hay	19	(630)
Urban, Other	9	(300)
Forest Land	24	(800)
TOTALS	100	(3330)

Of the 1,600 acres of cropland, 620 acres are muckland while the remainder are on upland areas. The main crops grown on the muckland include onions, potatoes, and lettuce. On upland cropland, dairy support crops such as corn, oats, and hay are grown. Approximately 12 owners farm the muckland and there are 12 operating farms in the upland areas.

The largest concentration of forest land is adjacent to the Barge Canal in the northwestern part of the watershed. Approximately 120 acres of forest land is state-owned land, managed by the Rome State School. The remaining area is in private ownership. There is a 65 acre plot of forest land on muck soil which has not been cleared for cultivation because of the water problems associated with it.

Elm-red maple is the predominant timber type and is generally found on lowland areas. Beech-birch-sugar maple is found on upland sites.

The harvest of forest products is generally confined to pole and sawtimber stands which cover approximately 80 percent of the forested area. There is a good market for sawlogs with several sawmills in the area.

Although urban and other land makes up only 9 percent of the watershed, the city of Rome is growing and the resulting expansion will put pressure on the watershed. Several upland farms already are being subdivided for home sites. A strip of land along both sides of James Street, Lawrence Street, and Route 365 is presently zoned commercial.

Upland soils are mainly glacial tills of the Hilton association and glacial outwash of the Howard association. These soils are moderately to well drained and mainly support dairy farming. Muck and peat associations are found on the lowlands, and some of these soils are intensively truck farmed. Depth of the muck soils is variable, but according to soil maps most of the area has over 3 feet of this organic soil. Some muckland north and west of the railroad has not been cleared because of a very high water table and a lack of a relatively impermeable barrier between these muck soils and the Barge Canal.

Although there is no wildlife on the cleared muckland, there are a few deer, rabbits and pheasants in the uplands of the watershed. No significant fishery is found in the ditch systems of the muckland.

WATERSHED PROBLEMS AND NEEDS

Since clearing of 620 acres of muckland for cultivation, subsidence has occurred and caused a lowering of the muck surface elevations. As a result, the invert elevations of the four culverts which carry runoff under the Penn-Central Railroad embankment are too high and the culverts too small to allow proper outlets for flood flows and to provide adequate agricultural drainage.

Flooding of the muckland results from excess water from the uplands and insufficient culvert capacity which results in ditch overtopping. The State Ditch culvert can only carry the 1-to-2 year frequency storm before water begins to back up. This backed up water then flows east and adds to that water going through

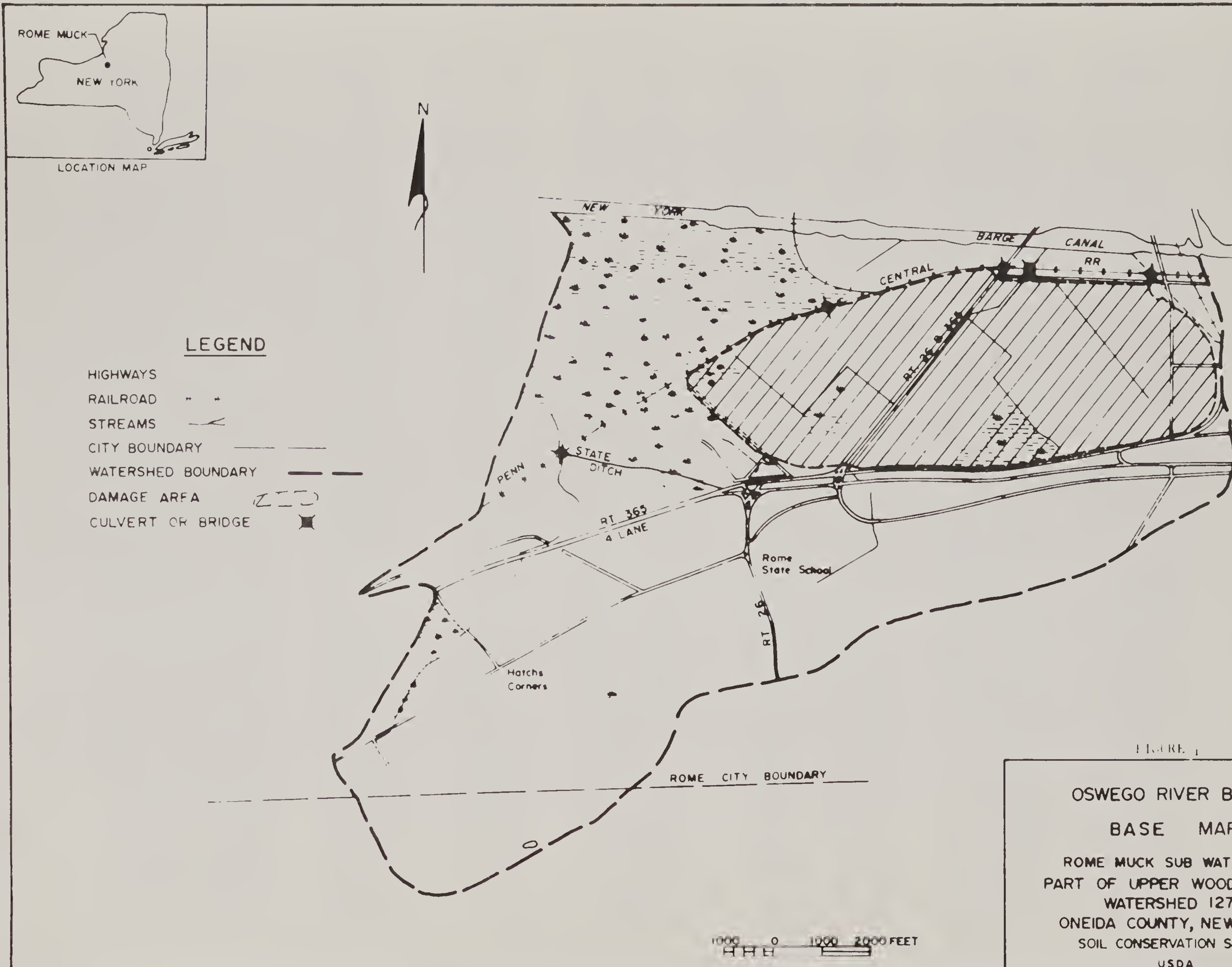


FIGURE 1

OSWEGO RIVER BASIN

BASE MAP

ROME MUCK SUB WATERSHED
PART OF UPPER WOODS CREEK
WATERSHED 127
ONEIDA COUNTY, NEW YORK
SOIL CONSERVATION SERVICE
USDA

the main culvert which drains the muck west of James Street. This main culvert also has a 1- to 2-year capacity and backs up quickly to flood the mucklands. Similar problems exist with the James Street and Lawrence Street culverts. Additional flow from the uplands is channeled through culverts under Route 365 onto the muck thus compounding the problem.

Average annual damage in Rome Muck is $40,482. This damage is to the vegetable crop - primarily onions and lettuce, and results from delayed spring planting and inundation of the muck during the growing season. Damages include (1) increased cost of production, (2) decrease in quality of products, (3) decreased yields, and (4) restricted choice of the type of crop, and (5) complete loss of crops in some cases.

Wind erosion of the muckland occurs during periods of dryness and is the biggest erosion problem. There are no protective measures such as windbreaks to control this type of erosion. Control of this erosion can extend the life of the mucklands.

There are no other significant sediment or erosion problems within the watershed. On upland cropland, some conservation treatment appears to be needed to protect the longer slopes and to permit a change in management and result in a more efficient operation.

The entire 620 acres of cleared muckland, plus the additional 65 acres of forest land which could be cleared for cultivation, has the potential for irrigation. Some irrigation is now being attempted, but it is being done in a random fashion only as an emergency measure during extremely dry periods. Irrigation is needed to control wind erosion, seed losses, and seedling damages. In addition, it will increase the quality and quantity of the products grown.

Because of the high inlet elevation of the four culverts under the railroad, proper drainage cannot be obtained. This impaired drainage is also aggravated by a lack of depth and capacity in the existing ditches. The problems experienced from the lack of drainage are similar to the agricultural damages previously described.

The hydrologic condition of forest land is generally good. Thinnings are needed in some pole stands to improve vigor, regulate stand density, and increase the percentage of desirable species. In addition, some control of grazing of woodlands is needed and harvest operations should be supervised to prevent deterioration of hydrologic condition.

Urban and suburban expansion of the city of Rome could have a deteriorating effect on the natural environment unless adequate land use planning is provided. In densely populated areas, vegetation grows under extremely adverse conditions. ~~of soil, water and air~~. Man-made structures and pollution provide the greatest problem and adverse conditions. In addition, serious problems - environmental, social, and economic in nature - are created by the expansion of the city into rural countryside. These problems relate to retention of open space, changing land values, taxation, and dislocation of rural-based enterprises.

PHYSICAL POTENTIAL FOR MEETING NEEDS

Land treatment measures can be installed on both the uplands and mucklands which will reduce the flooding problem and allow proper management of runoff for better water level control.

Practices needed and feasible to install on upland farms are: strip cropping, contour farming, conservation cropping systems, diversions, and tile. Before any practices can be effectively utilized on the muckland, the project measures must first be installed. Needed on-farm measures on the muckland include: windbreaks, drainage land grading, tile, and water management structures.

These measures can meet the land treatment needs only if the measures are completely planned and integrated, adequately engineered, well constructed, properly managed and adequately maintained.

Most of the forest land has a good potential to improve hydrologically. Proper drainage in the muckland areas will remove excess water from the state-owned forest land.

The watershed has relatively flat topography and an examination of the area showed that no potential floodwater retention sites are available which would provide measurable floodwater control downstream. A gravity outlet channel or a pumping plant to provide flood control and drainage were the basic alternatives considered. A pumping plant and pipeline were found to be necessary to provide irrigation water.

Consideration was given to a proposal to enlarge the present ditches and lower the present culverts. This sytem does not eliminate overland flows from Route 365. A modification provided a diversion along Route 365 outletting into the ditches.

Another possibility was to bring all the excess water to a large culvert which would provide capacity for a 10-year storm. This alternative includes the diversion and enlarged ditches.

The last alternative considered was a pump plant in place of the gravity culvert. This plan was found unfeasible.

After consideration of the alternatives, the system using a diversion, enlarged ditches, and a gravity culvert through the railroad embankment was found to provide an acceptable level of protection at the lowest cost.

In addition to these flood control alternatives, a pump system to provide irrigation water was considered. This irrigation system could be combined with any of the alternatives and would pump water from the Barge Canal into the ditch system where the farmers can pick it up with their sprinkler pumps. Part of the water would be piped to the diversion at James Street and released into the upper parts of the ditch system. The remainder would be put into the ditches above the water control structure at the main culvert.

Builders and owners have not built in the flood plain upstream from the muck. Consideration should be given to flood plain regulation zoning to prevent future development of properties subject to damage.

LOCAL INTEREST IN PROJECT DEVELOPMENT

In the early thirties, muckland owners formed a drainage district under provisions of the New York State Conservation Law. A district was formed for the Rome Muck, but since the program required the local people to pay most of the costs incurred, the approach was unsuccessful. This district is still a legal entity today although it is inactive.

In the early forties, the Soil Conservation Service provided technical assistance to small groups of farmers for ditching in the muck area. Assistance to individual farmers has been carried out over the years through the preparation of individual farm plans, but this did not solve the problems.

Numerous other efforts were made by the muckland owners to solve their problem. However, these efforts were not successful.

The local people have approached the Oneida County Soil and Water Conservation District and requested assistance in applying for a PL-566 project. The application has been completed and will be submitted upon receipt of a favorable preliminary examination.

The Eastern Oswego Regional Water Resources Planning Board is presently developing a plan for the Eastern Oswego River Basin which includes the Rome Muck watershed. This Board is provided technical assistance through the Division of Water Resources, New York State Conservation Department.

WORKS OF IMPROVEMENT FOR POTENTIAL DEVELOPMENT

Land Treatment

The Oneida County Soil and Water Conservation District's continuing program of assistance to landowners, emphasizes proper land use and the application of conservation practices to protect and improve all land.

Application of recommended conservation practices on cropland includes conservation cropping systems, cover crops, tile drains, drainage mains and laterals, water control systems and windbreaks. Practices recommended on grassland include planting and renovation, fencing, rotation grazing and farm ponds.

Forest fires are not a serious problem now, but continued protection is essential to derive the maximum benefits from the watershed.

There is very little idle land in need of tree planting. Thinnings in pole stands will improve tree vigor and growth, thereby favoring a residual stand of valuable commercial trees and soil building species.

Technical assistance is available to the county planning board, local community leaders, and developers in multiple-use planning on private, non-industrial lands in the watershed. Assistance of this type is needed to retain and improve for watershed protection, the optimum amounts of cover on areas being planned for urban use. Technical assistance can be provided to developers for on-site plans to minimize the deterioration of the hydrologic balance and the resulting erosion by the maintenance of vegetative cover during development. Urban developers will also be encouraged to utilize the natural landscape in their planning.

Structural Measures

A field reconnaissance was made of the area along with limited field surveys of some of the ditches. From this information, the following solution to the flood prevention drainage and irrigation problems of the Rome Muck is recommended. (See project map.) This plan includes 5.2 miles of ditch construction, 0.9 miles of diversion, a culvert under the railroad embankment and a pumping system for irrigation. Table V gives the design data for all structural measures.

1. The main culvert under the railroad, approximately 2,600 feet west of James Street, will be replaced with a larger culvert. The new culvert will have a water control structure at the inlet to provide water level regulation in the project area. No gate or other control type measure is required on the outlet end of the culvert.

2. A diversion will be constructed from James Street to Lawrence Street, parallel to and just north of Route 365. The purpose of this diversion is to intercept the floodwater from the uplands, channel it into Ditch 3, and thereby keep it from spreading over the muckland.

3. A channel (Ditch 3) will be constructed from the diversion, starting at a point approximately 2,200 feet west of Lawrence Street, to the main culvert under the railroad. This channel will carry the floodwater from the diversion through the muckland. A drop structure (No. II) will be needed approximately 1,300 feet east of James Street to reduce the velocity in the channel. Included in this structure will be a water level control feature. A bridge over this channel will be required at James Street.

4. The following ditches will be enlarged to carry the drainage and floodwater from the mucklands:

a. Ditch #1 will be constructed from the intersection of Lawrence Street and Route 365 to Martin Street approximately 1,100 feet east of James Street continuing along Martin Street to James Street. The ditch will cross under James Street through a culvert and continue along the railroad to the main culvert. The lateral (No. 1a) flowing north along the east side of James Street, will also be enlarged.

b. Ditch #2 will be constructed starting near the intersection of James Street and Route 365 and continuing northwest to the railroad approximately 4,600 feet west of the main culvert and then eastward along the railroad to the main culvert. A drop structure (No. I) will be required where the ditch turns eastward at the railroad. This will permit flood flows from the west to enter Ditch #2 without scouring. The lateral (No. 2a) along the west edge of the properties that front James Street to the west will also be deepened.

c. The lateral (No. 3a) along the east edge of the properties that front James Street to the east will be deepened. This lateral will outlet into Ditch #3 just below drop structure No. II.

d. The outlet channel (Ditch #4) from the main culvert under the railroad to the Barge Canal will be enlarged.

5. A pumping plant located at the main culvert under the railroad will be used to pump irrigation water into the ditch system. Part of the water will be piped 3,600 feet through a 12-inch diameter underground pipeline to the diversion at James Street and there released into the ditch system. The remainder would be put into the ditch system immediately above the water control structure at the pump. This will allow the water to be taken from the ditch system where needed. The pumping plant would have a maximum capacity of 5,500 gallons per minute.

Additional studies will need to be made in future planning to firmly establish the most economical and effective irrigation pumping and distribution system.

These works of improvement will provide adequate agricultural drainage, 10-year flood protection, and sufficient irrigation for the entire 620 acres of cleared muckland as well as the additional 65 acres which is expected to be cleared after the project measures are installed.

TABLE 1a - CHANNEL DATA

Rome Muck Subwatershed, Oswego River Basin

Channel Designation	Length (ft.)	Watershed Area (sq. mi.)	Needed Channel Capacity 1/ (cfs)	Bottom Width (ft.)	Depth (ft.)	Velocity in Channel (ft./sec.)	Estimated Volume of Excavation (cu. yds.)
Diversion	4,700	0.7	125	10	8.0	1.7	47,100
Ditch 1	6,610	0.4	44	6	6.0	.8	18,920
Ditch 1a	1,700	0.2	19	3	6.0	1.0	659
Ditch 2	6,800	2.4	178	18	6.0	1.7	38,223
Ditch 2a	2,700	0.2	20	3	6.0	1.0	6,500
Ditch 3	6,600	0.9	242	20	7.0	1.9	41,319
Ditch 3a	2,000	0.2	23	3	8.0	1.0	8,889
Ditch 4	1,200	4.2	395	35	7.0	1.5	41,319

1/ The diversion and Ditch 3 are designed for 10-year frequency discharge. All other ditches are designed for "B" drainage capacity.

Date: February 1970

TABLE 1b - STRUCTURE DATA

Rome Muck Subwatershed, Oswego River Basin

Item	Watershed Area (sq. mi.)	Needed Capacity (cfs)	Estimated Volume Concrete (cu. yds.)	Drop (ft.)	Remarks
Drop Structure I	2.2 1/	178 2/	36	6	Type "B" Drop Spillway
Drop Structure II	1.2	220 2/	36	5	Type "B" Drop Spillway
Main Culvert	4.2	406 3/	-	-	108" Dia. CMP
Waterlevel Control	4.2	406 3/	-	-	To be attached to inlet at main culvert
Irrigation System	-	12 4/	-	-	Pump and pipeline distribution system 5/

1/ The State Ditch takes some of the flow.
2/ 10-year frequency flow
3/ B drainage
4/ Irrigation requirement peak discharge
5/ 5500 gpm pump with 12 inch diameter underground pipeline 3600 feet long. Pipeline would carry approximately one-half the pump capacity.

Date: February 1970

NATURE AND ESTIMATE OF COST OF IMPROVEMENTS

The total cost of the works of improvements is estimated to be $602,200, of which $425,450 will be from Public Law 566 funds and $176,750 will be paid for by the local sponsoring organization. The estimated cost and distribution of costs is shown in Tables II and III. Cost allocation and cost-sharing details are shown in Table IV.

Operation and maintenance of this project was estimated as being 2 percent of the cost of construction not including the cost of the large culvert.

Cost estimates made in this study were based upon the use of $1.00 per cubic yard for channel excavation, $150 per cubic yard for concrete, and $2,000 per cubic foot per second of water pumped for the cost of a pumping plant. Volume estimates were based upon limited survey cross-sections and a topography map of the area. The cost estimate of the culvert under the railroad was based upon information obtained from suppliers.

Costs for pumping and other aspects of the irrigation system are based on limited information obtained for this study. More detailed studies during the planning phase of the project will firm up the final costs for irrigation. It is expected that these will provide an even more favorable benefit cost ratio.

Ditches Nos. 1,2,2A,3A,4 and that part of Ditch #3 which serves both flood protection and drainage were allocated in accordance with the first method shown in the Watershed Protection Handbook, Chapter 3, paragraph 103.0221. The diversion and irrigation system only serve flood prevention and irrigation respectively; therefore, no allocation of costs were necessary. Local sponsors are responsible for 100 percent of the land rights costs for all purposes. Federal funds must bear 100 percent of the construction and engineering cost allocated to flood prevention. Federal funds may bear up to 50 percent of the construction cost and all of the engineering costs allocated to drainage and irrigation. Local sponsors must bear at least 50 percent of the construction cost allocated to drainage and irrigation. The sponsors and the Service must each bear the project administration costs they incur for these purposes.

TABLE II - ESTIMATED STRUCTURAL COST-POTENTIAL DEVELOPMENT

Rome Muck Subwatershed, Oswego River Basin

Item	Unit	Amount Planned	Estimated Total Cost (Dollars) 1/
STRUCTURAL MEASURES			
Construction			
Diversion	Miles	0.9	56,500
Ditches 1,2,2A,3A,4	Miles	4.0	128,100
Ditch 3	Miles	1.2	49,600
Drop Structure I	No.	1	6,600
Drop Structure II	No.	1	6,600
Main Culvert	No.	1	108,000
Water Level Control	No.	1	9,700
Irrigation System	No.	1	41,000
Subtotal Construction			406,100
Engineering Services			36,600
Installation Services			73,100
Land Rights			78,300
Administration of Contracts			8,100
TOTAL STRUCTURAL MEASURES			602,200

1/ Price Base: 1969

Date: February 1970

TABLE III - DISTRIBUTION OF STRUCTURAL COST-POTENTIAL DEVELOPMENT

Rome Muck Subwatershed, Oswego River Basin

(Dollars) 1/

Structural Measures	Installation Cost					
	Construction	Engineering Services	Project Administration	Land Rights	Administration of Contracts	Total
Diversion	56,500	5,100	10,200	2,900	1,100	75,800
Ditches 1,2,2A,3A,4	128,100	11,500	23,100	42,600	2,600	207,900
Ditch 3	49,600	4,500	8,900	26,600	1,000	90,600
Drop Structure I	6,600	600	1,200	200	100	8,700
Drop Structure II	6,600	600	1,200	200	100	8,700
Main Culvert	108,000	9,700	19,400	1,000	2,200	140,300
Water Level Control	9,700	900	1,700	200	200	12,700
Irrigation System	41,000	3,700	7,400	4,600	800	57,500
TOTAL	406,100	36,600	73,100	78,300	8,100	602,200

1/ Price Base: 1969

Date: February 1970

TABLE IV - COST ALLOCATION AND COST SHARING SUMMARY

Rome Muck Subwatershed, Oswego River Basin

(Dollars) 1/

Item	Cost Allocation				Cost Sharing							
	Purpose				Public Law 566				Other			
	Flood Prev.	Drainage	Irrig.	Total	Flood Prev.	Drainage	Irrig.	Total	Flood Prev.	Drainage	Irrig.	Total
Diversion	64,500			64,500	61,600			61,600	2,900			2,900
Ditches 1,2, 2A,3A,4	91,100	91,100		182,200	69,800	37,775		107,575	21,300	53,325		74,625
Ditch 3	61,300	19,400		80,700	41,100	7,050		48,150	20,200	12,350		32,550
Drop Struc. I	3,700	3,700		7,400	3,600	1,950		5,550	100	1,750		1,850
" " II	5,600	1,800		7,400	5,450	950		6,400	150	850		1,000
Main Culvert	59,350	59,350		118,700	58,850	31,850		90,700	500	27,500		28,000
Water Level Control	5,400	5,400		10,800	5,300	2,875		8,175	100	2,525		2,625
Irrig. System			49,300	49,300			24,200	24,200			25,100	25,100
Subtotal	290,950	180,750	49,300	521,000	245,700	82,450	24,200	352,350	45,250	98,300	25,100	168,650
Project Administration				81,200				73,100				8,100
GRAND TOTAL	290,950	180,750	49,300	602,200	245,700	82,450	24,200	425,450	45,250	98,300	25,100	176,750

1/ Price Base: 1969.

Date: February 1970

TABLE V - ANNUAL COST

Rome Muck Subwatershed, Oswego River Basin
(Dollars) 1/

Evaluation Unit	Amortization of 2/ Installation Cost	Operation and Maintenance Cost	Total
Number I	25,340	5,140	30,480
Diversion Ditches 1,2,2A,3,3A,4 Drop Structures I & II Main Culvert Waterlevel Control			
Number II	2,650	1,920	4,570
Irrigation System			
Project Administration	4,360	-	4,360
GRAND TOTAL	32,350	7,060	39,410

1/ Price Base: Installation 1969, O&M Long Term
2/ Fifty years @ 4-7/8 percent interest

Date: February 1970

TABLE VI - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Rome Muck Subwatershed, Oswego River Basin

(Dollars)

Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/							Average Annual Cost 2/	Benefit Cost Ratio
	Floodwater Prevention		Agricultural Water Management						
	Damage Reduction	Changed Land Use	Drainage	Changed Land Use	Irrigation	Secondary	Total		
Number I	34,410	4,050	21,800	2,565	-	9,420	72,245	30,480	2.4:1
Diversion Ditches 1,2,2A,3,3A,4 Drop Structures I & II Main Culvert Waterlevel Control									
Number II	-	-	-	-	16,950	1,695	18,645	4,570	4.1:1
Irrigation System									
Project Administration	-	-	-	-	-	-	-	4,360	-
GRAND TOTAL	34,410	4,050	21,800	2,565	16,950	11,115	90,890	39,410	2.3:1

1/ Price Base: 1969
2/ From Table V

Date: February 1970

Average annual floodwater damages will be reduced from $40,482 to $6,072 by the proposed project, an 85 percent reduction. Additional benefits will be derived from the installation of land treatment.

The estimated average annual cost of the structural measures (amortized installation cost plus annual operation and maintenance cost) is $39,410.

Benefits compared to cost and expressed as a ratio are 2.3:1.0 (see table VI). All purposes of this project have a favorable benefit cost ratio.

ALTERNATE OR ADDITIONAL POSSIBILITIES

Other possibilities were considered until it became obvious they would not be economically feasible. At the time, costs of each alternate were discovered to exceed benefits, further study was terminated. These alternatives included using three culverts, using a culvert under James Street, and not using a diversion. The possibility of using a pumping plant for drainage was studied, but due to the high installation cost, and high operating cost, it was not recommended.

There may be a possibility of installing a pumping plant to serve the both purposes of irrigation and flood control. This alternative will warrant consideration by the local sponsors.

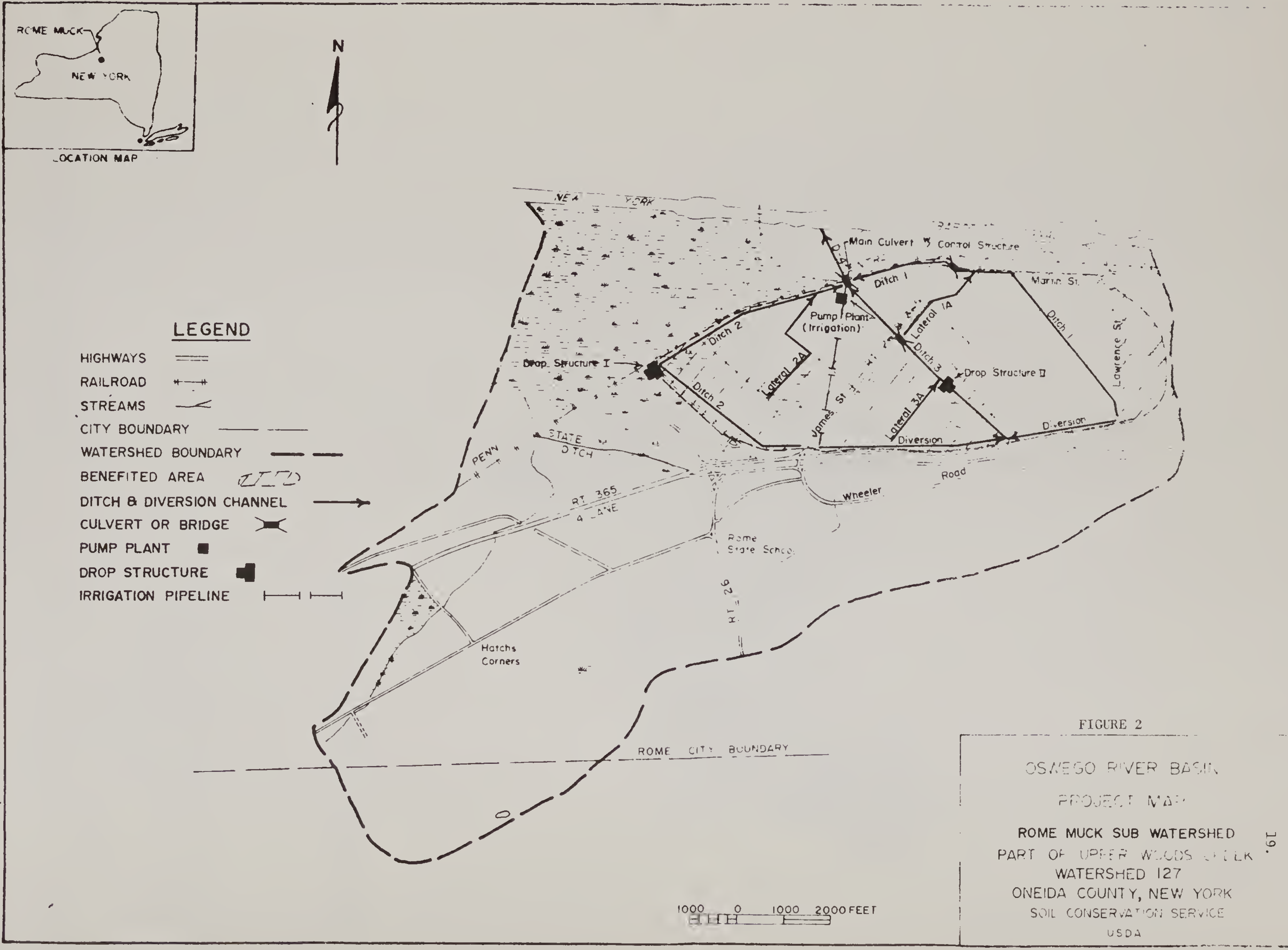


FIGURE 2

OSWEGO RIVER BASIN

PROJECT MAP

ROME MUCK SUB WATERSHED
PART OF UPPER WOODS CREEK
WATERSHED 127
ONEIDA COUNTY, NEW YORK
SOIL CONSERVATION SERVICE
USDA

● POTENTIAL UPSTREAM RESERVOIR SITE

5 0 5 MILES

OSWEGO RIVER BASIN
WATERSHED NO. 68

INLET CREEK
SOIL CONSERVATION SERVICE
USDA

WATER-IMPOUNDING STRUCTURE DESIGN AND COST DATA

WESTERN NEW YORK RIVER BASINS — OSWEGO RIVER BASIN

ELEVATION MSL: BEN USE POOL	ELEVATION MSL: EMER SPWY CREST	ELEVATION MSL: DSGN HIGH WATER	ELEVATION MSL: TOP OF DAM	HT DAM FT.: MAX HT.	STORAGE AC-FT: SED POOL	STORAGE AC-FT: BEN USE	STORAGE AC-FT: TEMP FLOOD	STORAGE AC-FT: TOTAL EMER SPWY CREST	SURFACE AREA AC.: BEN USE POOL	SURFACE AREA AC.: DSGN HIGH WTR	FILL (1000 YD.): VOL	INSTALLATION COST $1,000: CONST	INSTALLATION COST $1,000: INST SERV	INSTALLATION COST $1,000: L/R	INSTALLATION COST $1,000: ADM	INSTALLATION COST $1,000: TOTAL	UNIT COST $ PER UNIT: PER AC-FT TOTAL STORE	UNIT COST $ PER UNIT: PER ACRE BEN SURF	UNIT COST $ PER UNIT: PER AC-FT BEN STORE
SITE 68-1	ELEV. BOTTOM PROFILE-1035.0	D.A.= 14.70 SQ.MI.	POTENTIAL USE- F.C.,IRR,W.S.,REC,F&W.																
.060.9	1080.6	1084.6	1087.6	53	196		2048	2440		242	184	303	82	91	6	482	198		
.068.5	1081.7	1085.7	1088.7	54	392	250	2048	2689	92	251	195	315	85	103	6	510	190	5523	2041
.074.6	1085.0	1089.0	1092.0	57	392	999	2048	3438	150	279	230	351	95	139	7	592	172	3940	593
.079.0	1087.9	1091.9	1094.9	60	392	1748	2048	4188	193	308	266	388	105	170	8	671	160	3479	384
1082.6	1090.5	1094.5	1097.5	62	392	2497	2048	4937	225	334	302	427	115	199	9	750	152	3335	300
1085.7	1093.0	1097.0	1100.0	65	392	3246	2048	5686	251	361	337	469	127	226	9	832	146	3309	256
SITE 68-2	ELEV. BOTTOM PROFILE-1112.0	D.A.= 7.90 SQ.MI.	POTENTIAL USE- F.C.,W.S.,REC,F&W,SED.																
1131.2	1153.0	1157.0	1160.0	48	105		921	1131		122	98	199	54	58	4	315	279		
.144.3	1155.6	1159.6	1162.6	51	211	271	921	1402	52	137	111	228	61	106	5	400	285	7671	1476
.154.6	1161.8	1165.8	1168.8	57	211	1083	921	2214	107	182	146	289	78	291	6	663	299	6176	612
1161.0	1166.5	1170.5	1173.5	61	211	1895	921	3027	147	219	178	336	91	428	7	862	285	5845	455
1165.9	1170.5	1174.5	1177.5	66	211	2708	921	3839	184	255	207	378	102	509	8	996	260	5426	368
.170.0	1174.0	1178.0	1181.0	69	211	3520	921	4651	215	287	235	414	112	580	8	1113	239	5175	316
SITE 68-4	ELEV. BOTTOM PROFILE-1302.0	D.A.= 10.00 SQ.MI.	POTENTIAL USE- F.C.,W.S.,REC,F&W,IRR, SED.																
.338.5	1379.7	1383.7	1386.7	85	133		1210	1477		83	125	236	64	65	5	369	250		
.366.9	1386.2	1390.2	1393.2	91	267	519	1210	1996	40	105	153	277	75	73	6	431	216	10693	829
.389.7	1399.6	1403.6	1406.6	105	267	2077	1210	3554	103	158	225	369	100	109	7	585	165	5660	282
.402.0	1409.3	1413.3	1416.3	114	267	3635	1210	5112	151	205	290	448	121	172	9	750	147	4966	206
.411.1	1416.9	1420.9	1423.9	122	267	5193	1210	6670	193	262	349	529	143	222	11	904	136	4682	174
.418.4	1423.0	1427.0	1430.0	128	267	6750	1210	8227	237	338	403	606	164	263	12	1045	127	4406	155

POTENTIAL USE ABBREVIATIONS

:C	FLOOD CONTROL	LFA	LOW FLOW AUGMENTATION	SED	SEDIMENT CONTROL
:+W	FISH AND WILDLIFE	LLR	LAKE LEVEL REGULATION	WQ	WATER QUALITY CONTROL
RR	IRRIGATION	REC	RECREATION	WS	WATER SUPPLY

THE PURPOSES NOTED ARE BASED ON PRELIMINARY INFORMATION AND MAY BE REVISED AFTER PLAN FORMULATION IS ACCOMPLISHED.

WATER-IMPOUNDING STRUCTURE DESIGN AND COST DATA

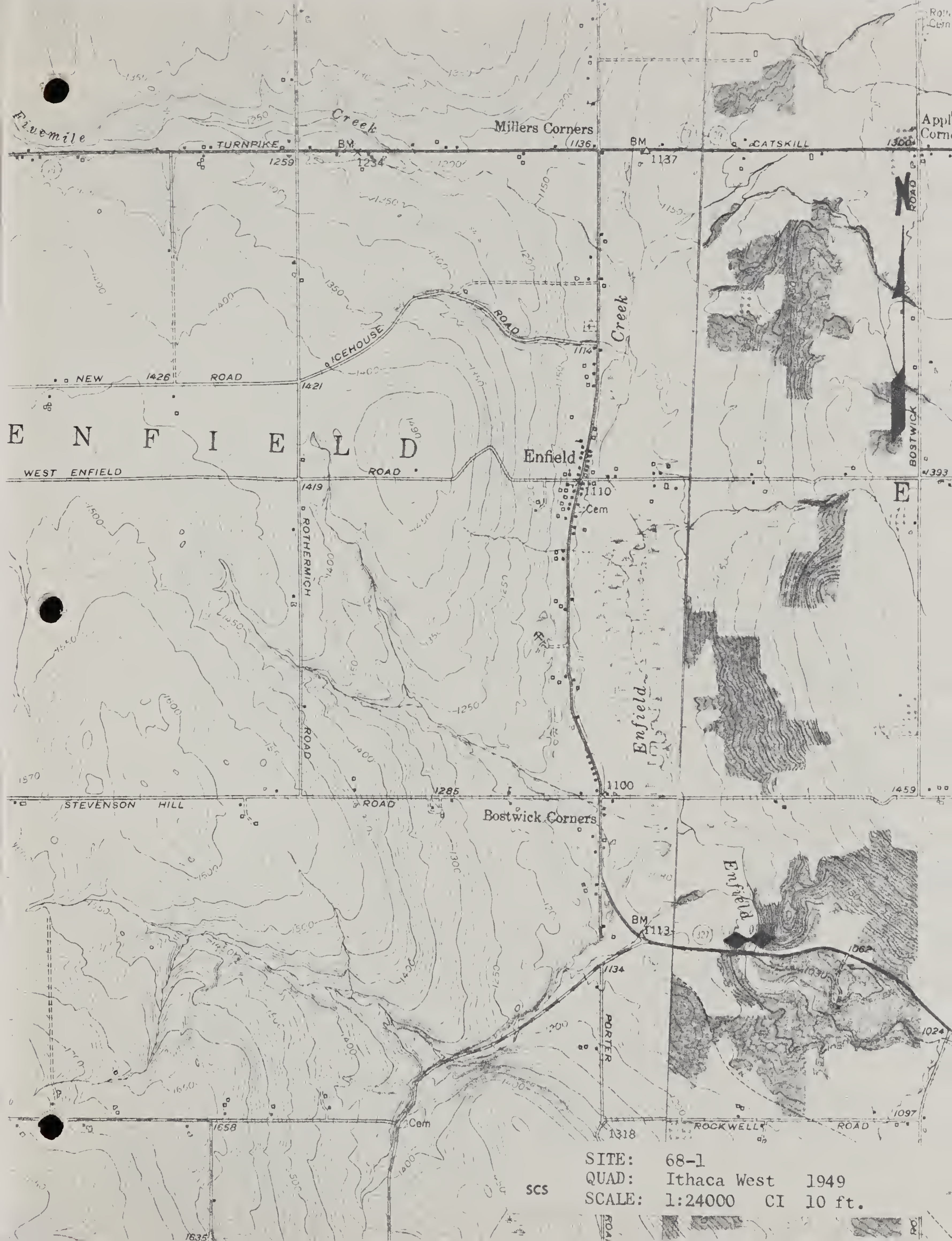
WESTERN NEW YORK RIVER BASINS — OSWEGO RIVER BASIN

ELEVATION MSL: BEN USE POOL	ELEVATION MSL: EMER SPWY CREST	ELEVATION MSL: DSGN HIGH WATER	ELEVATION MSL: TOP OF DAM	HT DAM FT.: MAX HT.	STORAGE AC-FT: SED POOL	STORAGE AC-FT: BEN USE	STORAGE AC-FT: TEMP FLOOD	STORAGE AC-FT: TOTAL EMER SPWY CREST	SURFACE AREA AC.: BEN USE POOL	SURFACE AREA AC.: DSGN HIGH WTR	FILL (1000 YD.): VOL	INSTALLATION COST $1,000: CONST	INSTALLATION COST $1,000: INST SERV	INSTALLATION COST $1,000: L/R	INSTALLATION COST $1,000: ADM	INSTALLATION COST $1,000: TOTAL	UNIT COST $ PER UNIT: PER AC-FT TOTAL STORE	UNIT COST $ PER UNIT: PER ACRE BEN SURF	UNIT COST $ PER UNIT: PER AC-FT BEN STORE
SITE 68-5	ELEV. BOTTOM PROFILE-1380.0	D.A.= 5.00 SQ.MI.	POTENTIAL USE- F.C.,W.S.,REC,F&W,IRR.																
1408.1	1431.1	1435.1	1438.1	58	67		605	738		100	111	215	58	56	4	334	452		
1422.8	1432.7	1436.7	1439.7	60	133	134	605	873	33	108	119	231	62	70	5	368	422	11156	2741
1430.2	1436.8	1440.8	1443.8	64	133	537	605	1276	75	128	145	273	74	108	5	460	361	6148	856
1434.9	1440.3	1444.3	1447.3	67	133	940	605	1678	99	146	173	311	84	139	6	540	321	5471	574
1438.6	1443.3	1447.3	1450.3	70	133	1343	605	2081	117	162	200	344	93	164	7	607	292	5186	452
1441.8	1446.0	1450.0	1453.0	73	133	1746	605	2484	133	176	230	378	102	186	8	674	271	5049	386
SITE 68-6	ELEV. BOTTOM PROFILE-1210.0	D.A.= 11.80 SQ.MI.	POTENTIAL USE- F&W,REC,W.S.,IRR.																
1230.8	1276.8	1280.8	1283.8	74	157		1375	1690		62	245	369	100	71	7	547	324		
1256.4	1284.1	1288.1	1291.1	81	315	449	1375	2139	34	69	313	447	121	71	9	647	303	18990	1443
1283.6	1301.8	1305.8	1308.8	99	315	1795	1375	3485	65	94	532	720	194	77	14	1006	289	15502	560
1301.5	1315.5	1319.5	1322.5	112	315	3141	1375	4831	88	116	753	998	270	81	20	1369	283	15517	436
1315.2	1326.7	1330.7	1333.7	124	315	4487	1375	6177	108	143	969	1285	347	88	26	1745	283	16125	389
1326.5	1336.0	1340.0	1343.0	133	315	5833	1375	7523	132	167	1177	1560	421	94	31	2107	280	15912	361

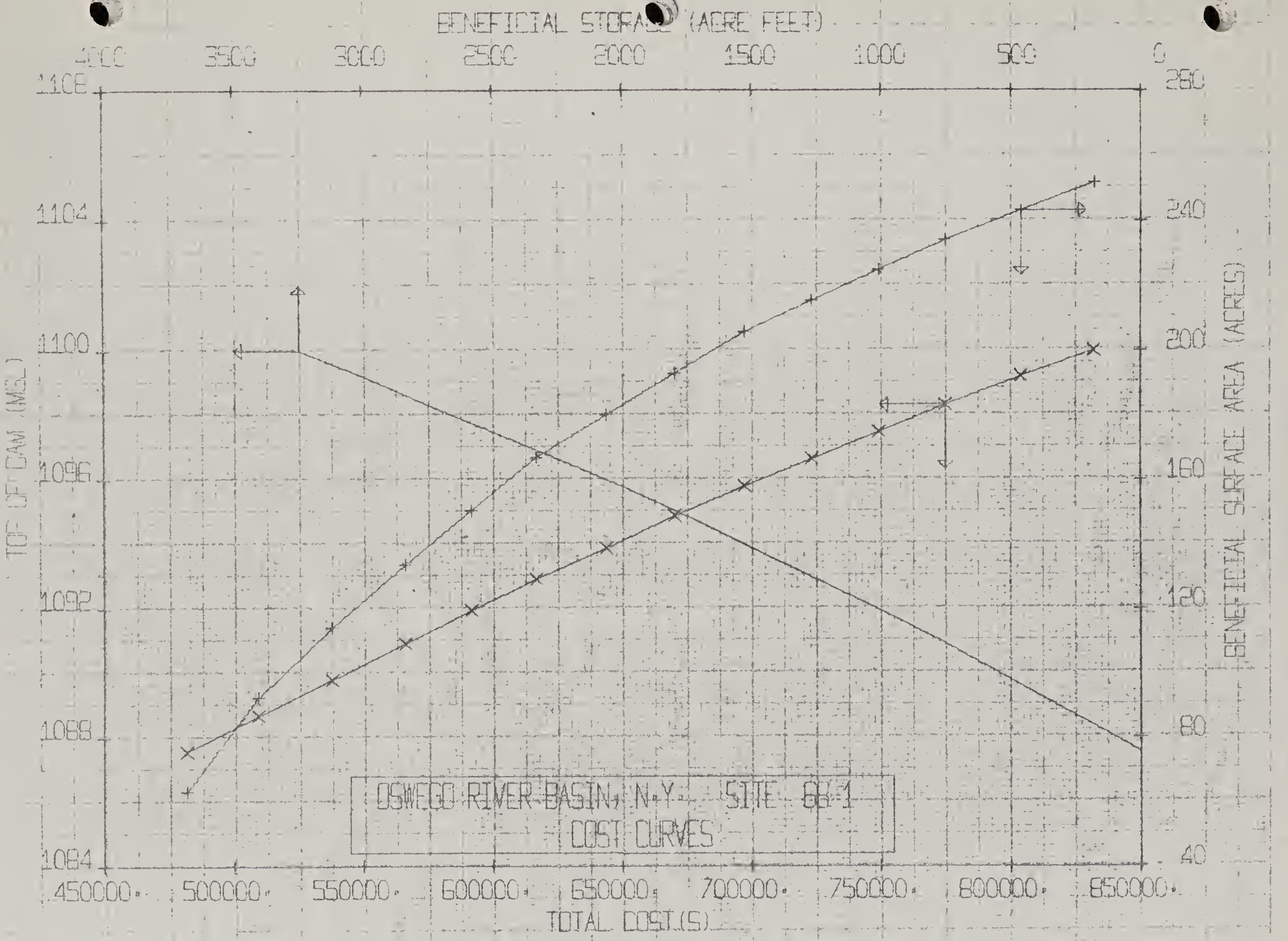
POTENTIAL USE ABBREVIATIONS

FC	FLOOD CONTROL	LFA	LOW FLOW AUGMENTATION	SED	SEDIMENT CONTROL
F+W	FISH AND WILDLIFE	LLR	LAKE LEVEL REGULATION	WQ	WATER QUALITY CONTROL
IRR	IRRIGATION	REC	RECREATION	WS	WATER SUPPLY

THE PURPOSES NOTED ARE BASED ON PRELIMINARY INFORMATION AND MAY BE REVISED AFTER PLAN FORMULATION IS ACCOMPLISHED.



SITE: 68-1
QUAD: Ithaca West 1949
SCALE: 1:24000 CI 10 ft.
SCS

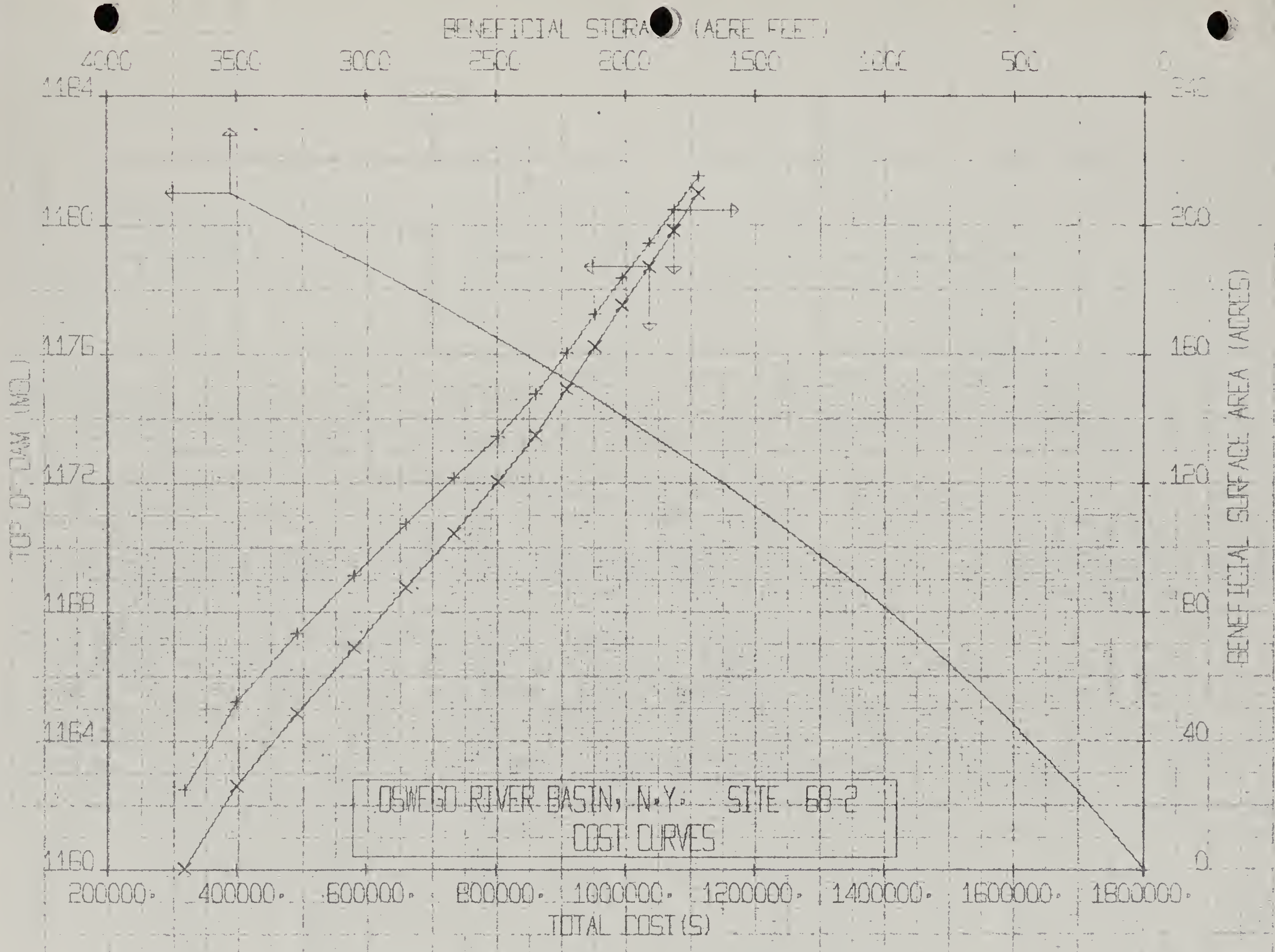

BENEFICIAL STORAGE (ACRE FEET)
4000
3500
3000
2500
2000
1500
1000
500
0
TOP OF DAM (MSL)
1108
1104
1100
1096
1092
1088
1084
BENEFICIAL SURFACE AREA (ACRES)
280
240
200
160
120
80
40
OSWEGO RIVER BASIN, N.Y. SITE 6B-1
COST CURVES
450000.
500000.
550000.
600000.
650000.
700000.
750000.
800000.
850000.
TOTAL COST($)

SCS

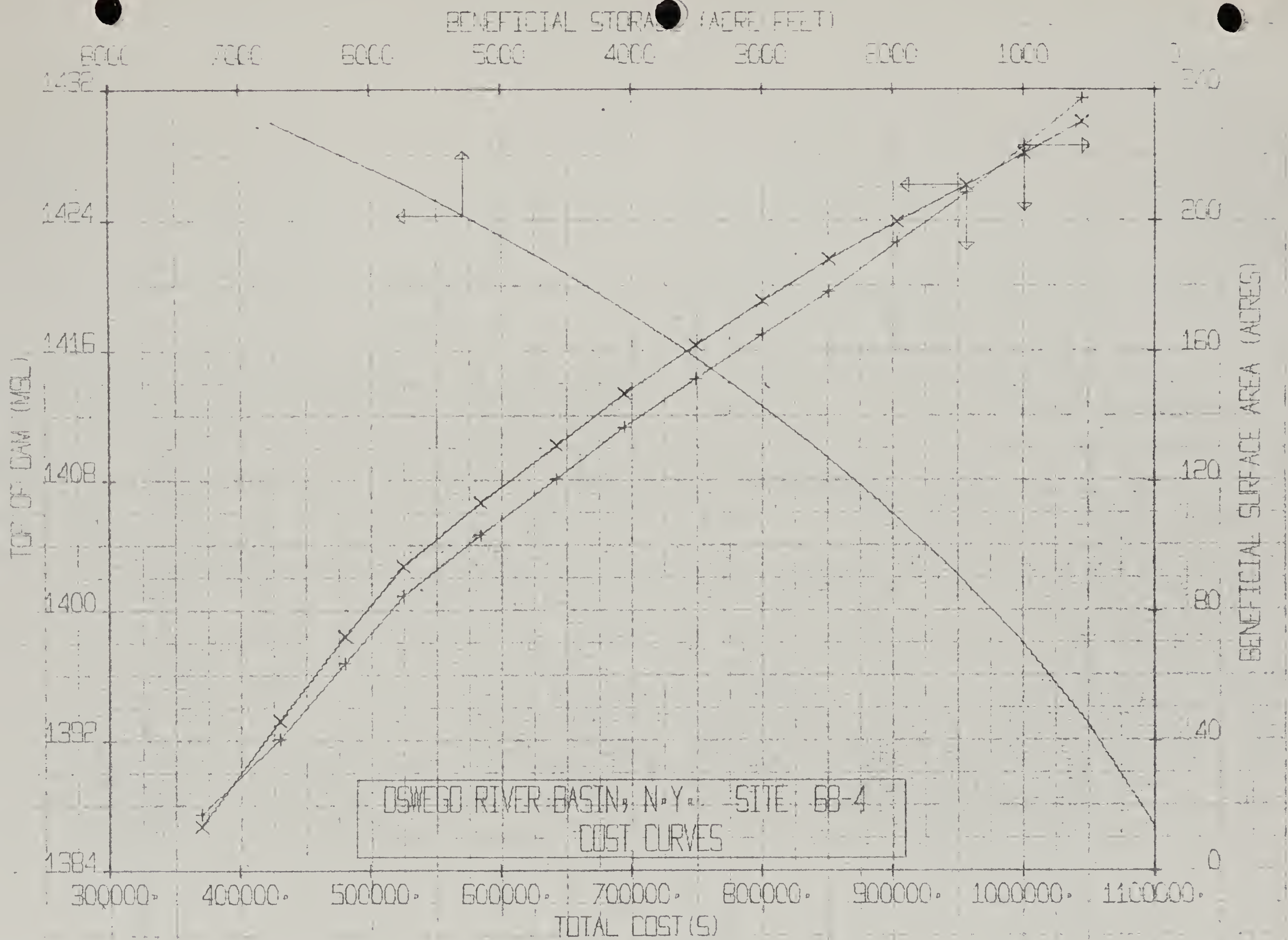
SITE: 68-2

QUAD: Ithaca East & West Danby 1949

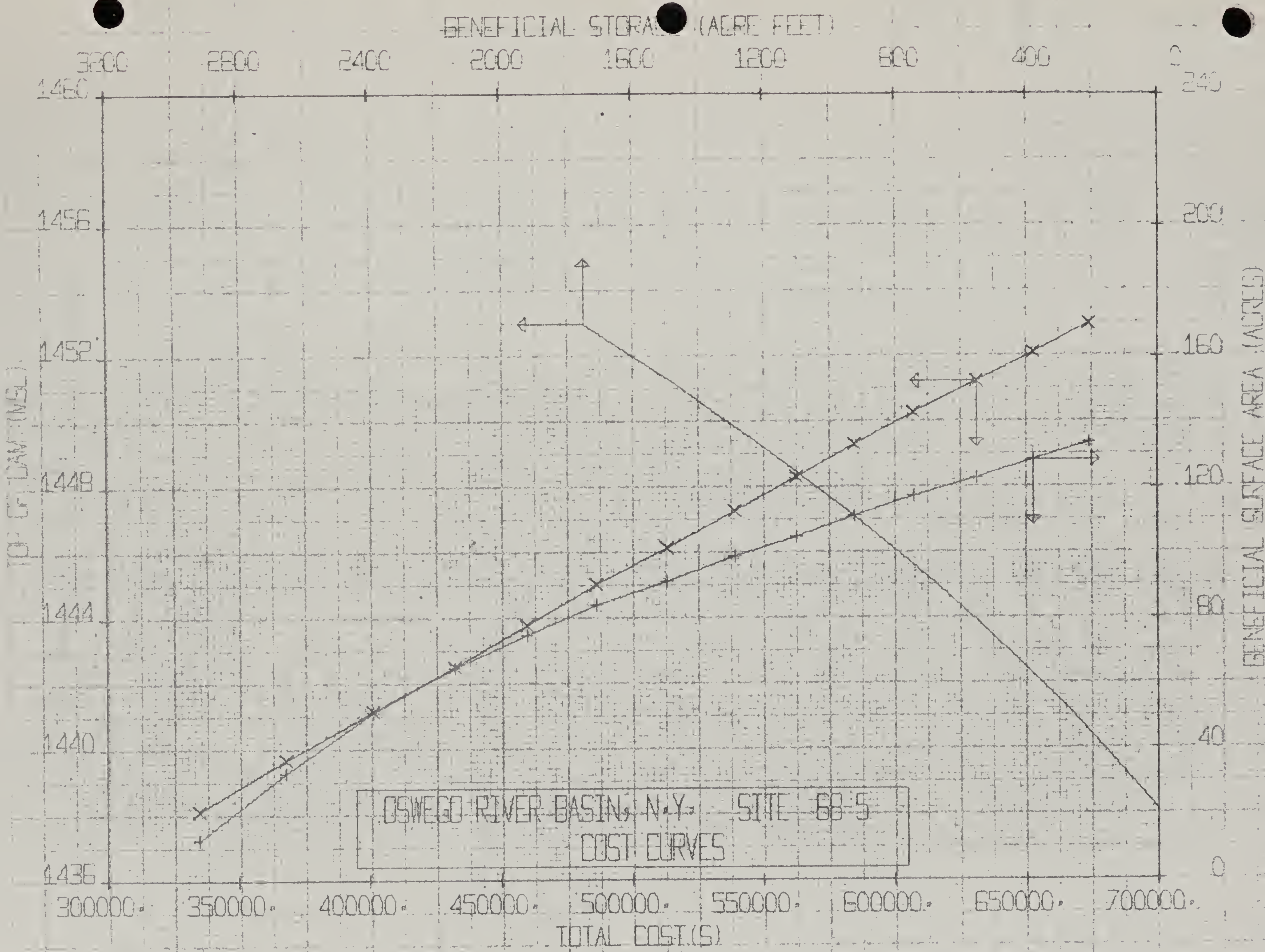
SCALE: 1:24000 CI 10 ft.


BENEFICIAL STORAGE (ACRE FEET)
4000 3500 3000 2500 2000 1500 1000 500 0
TOP OF DAM (MSL)
1184 1180 1176 1172 1168 1164 1160
BENEFICIAL SURFACE AREA (ACRES)
240 200 160 120 80 40 0
OSWEGO RIVER BASIN, N.Y. SITE 68-2
COST CURVES
200000 400000 600000 800000 1000000 1200000 1400000 1600000 1800000
TOTAL COST ($)

SCS
SITE: 68-4
QUAD: Dryden, N.Y. 1949
SCALE: 1:24000 CI 10 ft.

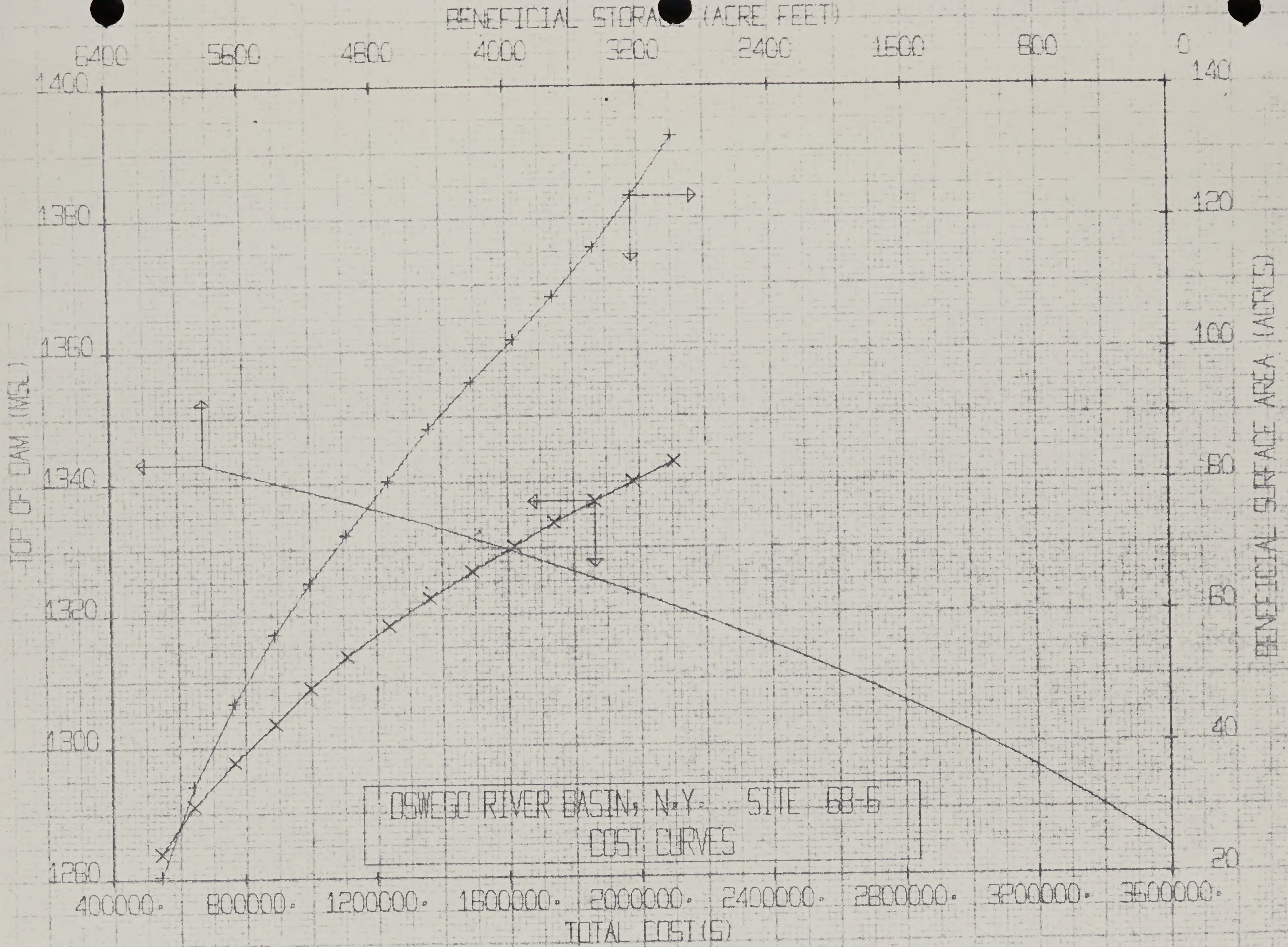

BENEFICIAL STORAGE (ACRE FEET)
8000
7000
6000
5000
4000
3000
2000
1000
0
1432
1424
1416
1408
1400
1392
1384
TOP OF DAM (MSL)
240
200
160
120
80
40
0
BENEFICIAL SURFACE AREA (ACRES)
OSWEGO RIVER BASIN, N.Y. SITE 6B-4
COST CURVES
300000.
400000.
500000.
600000.
700000.
800000.
900000.
1000000.
1100000.
TOTAL COST($)


Yello
Hill
1623
1578
1526
1524
1496
1529
1462
1550
1382
1327
MIDLINE
ROAD
Creek
Sixmile
IRISH SETTLEMENT
ROAD
1650
1700
1400
1900
1950
1750
SITE: 68-5
SCS
QUAD: Dryden, N.Y. 1949
SCALE: 1:24000 CI 10 ft.


BENEFICIAL STORAGE (ACRE FEET)
3200
2800
2400
2000
1600
1200
800
400
0
1460
1456
1452
1448
1444
1440
1436
TOP OF DAM (MSL)
240
200
160
120
80
40
0
BENEFICIAL SURFACE AREA (ACRES)
OSWEGO RIVER BASIN, N.Y. SITE 68-5
COST CURVES
300000.
350000.
400000.
450000.
500000.
550000.
600000.
650000.
700000.
TOTAL COST($)

SCS

SITE: 68-6
QUAD: Dryden, N.Y. 1949
SCALE: 1:24000 CI 10 ft.


BENEFICIAL STORAGE (ACRE FEET)
6400
5600
4800
4000
3200
2400
1600
800
0
TOP OF DAM (MSL)
1400
1380
1360
1340
1320
1300
1280
BENEFICIAL SURFACE AREA (ACRES)
140
120
100
80
60
40
20
400000.
800000.
1200000.
1600000.
2000000.
2400000.
2800000.
3200000.
3600000.
TOTAL COST($)
OSWEGO RIVER BASIN, N.Y. SITE 6B-6
COST CURVES